Claims

1. Bi-directional telescope for a laser on air telecommunication system, the telescope comprising:

a primary optical surface (16);

at least one transmitting device (12; 121, 122) forming at least one transmitting beam impinging against the primary optical surface (16) at an at least one illuminated area (24; 241, 242), the at least one transmitting beam having a corresponding axis (12'; 121', 122');

a receiving device (14) collecting the power deflected by an optical surface (26) of the primary optical surface (16) into a receiving beam, the receiving beam having an axis (14');

characterized in that the optical surface (26) of the primary optical surface (16) is larger than the at least one illuminated area (24; 241, 242) and in that the transmitting beam axis (12'; 121', 122') does not coincide with the receiving beam axis (14').

2. Telescope according to claim 1, characterized in that it further comprises a secondary optical surface (18), wherein the received power deflected by the optical surface (26) of the primary optical surface (16) is focused by the secondary optical surface into the receiving beam.

3. Telescope according to claim 1 or 2, characterized in that said primary optical surface comprises a hole (20).

4. Telescope according to claim 2, characterized in that said at least one transmitting device (12; 121, 122) is placed fundamentally in front of the reflecting surface (26), behind the secondary optical surface (18) and in that the secondary optical surface (18) comprises holes (22; 221, 222).

5. Telescope according to any of claims 1 or 2, characterized in that said at least one transmitting device (12; 121, 122) is placed fundamentally behind the reflecting surface (26) and in that it further comprises means (30) for deflecting the transmitting beam towards the secondary optical surface (18).

6. Method for receiving-transmitting an optical signal through a bi-directional telescope for a laser on air telecommunication system, the method

comprising:

providing a primary optical surface (16);

providing at least one transmitting device (12; 121, 122) forming at least one transmitting beam impinging against the primary mirror (16) at an at least one illuminated area (24; 241, 242), the at least one transmitting beam having a corresponding axis (12'; 121', 122');

providing a receiving device (14) collecting the power deflected by an optical surface (26) of the primary optical surface (16) into a receiving beam, the receiving beam having an axis (14');

characterized in that the optical surface (26) is larger than the at least one illuminated area (24; 241, 242) and in that the transmitting beam axis (12'; 121', 122') does not coincide with the receiving beam axis (14').

7. Method according to claim 6, characterized by further comprising the step of providing a secondary optical surface (18), wherein the received power deflected by the optical surface (26) of the primary optical surface (16) is focused by the secondary optical surface into the receiving beam.

8. Method according to claim 6 or 7, characterized by further comprising the step of making a hole (20) in said primary optical surface.

9. Method according to claim 7, characterized by placing said at least one transmitting device (12; 121, 122) fundamentally in front of the reflecting optical surface (26), behind the secondary optical surface (18) and making at least one hole (22; 221, 222) in the secondary optical surface (18).

10. Method according to claim 7, characterized by placing said at least one transmitting device (12; 121, 122) fundamentally behind the reflecting optical surface (26) and by providing means (30) for deflecting the transmitting beam towards the secondary optical surface (18).